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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/319,566	08/09/1999	HANS-JURGEN HANSEN	27656/35739	3274

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EXAMINER

ANGEBRANNDT, MARTIN J

ART UNIT	PAPER NUMBER
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1756

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DATE MAILED: 05/20/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/319,566

Applicant(s)

HANSEN, HANS-JURGEN

Examiner

Martin J Angebranndt

Art Unit

1756

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 and 17-27 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-15 and 17-27 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 March 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Art Unit: 1756

1. The response provided by the applicant has been read and given careful consideration.

Responses to the arguments offered by the applicant are presented after the first rejection to which they are directed.

2. The disclosure is objected to because of the following informalities: The applicant should correct misspellings within the specification, such as "diskussion" on page 11 at line 23.

Appropriate correction is required.

- 3 The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

- 4 Claim 18 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

" , like azobenzene" confuses the claims as this is a species of "photoactive diazo-containing groups". (claim 18)

The language " , which provides the possibility to use distinct conjugation states ...for information storage and data processing" conflicts with the preamble of the claims which describes the claimed subject matter as a "Method for information storage and data processing" , please amend to render the claim clear and self-consistent.

- 5 Claim 27 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for these substituents when the [4n]-annulenes are co-polymerized with the recited polymers, does not reasonably provide enablement for merely having these alone. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to practice the invention commensurate in scope with these claims. ***

Art Unit: 1756

See page 24/lines 8-16.

6 The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7 The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8 Claims 1,2,6,7,11-14 and 25 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Anger et al. J. Phys. Chem., Vol. 99, pp. 650-652. (1995)

The 1,5-bisstyryl-3,7-dimethylcyclooctatetraene and the exposure thereof meet the requirements of the claims as the claims do not require any more than the isomerizations.

The applicant argues that the disclosure does not evidence two distinguishable states for the double bond shift. The examiner notes that the exposure occurs and eventually results in other isomerizations as pointed out by the applicant, but the claim language does not indicate that either of these states be stable for long term storage. The examiner also notes that the processing process includes both thermal and photoexcitation. Therefore even transitions occurring rapidly at room temperature are embraced by the current claim language. The rejection stands.

The examiner agrees that the two isomers have to be different enough to be detectable. The examiner notes that the cyclooctatetraenes of the reference would be expected to be able to undergo the same boat conformation states as shown for 2a' and 2b' on page 5 of the instant application. There is no evidence that they do not on the record and as they are different conformations, their spectral properties would inherently differ. The examiner notes that this reference does not teach heptalenes. The applicant apparently fails to recognize that isomerization is the language used in the claims to describe the different resonance/conformational states.

9 Claims 1-7,12,13 and 25 are rejected under 35 U.S.C. 102(b) as being fully anticipated by El Houar et al., *Chemia* vol. 50, pp 341 (7/8-1996).

See formulae 3 and 4.

The exposure of the compounds meets the requirements of the claims as the claims do not require any more than the isomerizations.

As discussed above, the claims embrace both photo and thermal excitation of the transition between the two states. Further, the examiner notes that the absorption of the two different states differ and that the starting product is disclosed and forms the basis for the **anticipation rejection**. The rejection is that based upon the evidence, the compounds and processes are not novel as someone has made and used these. The applicant has specifically excluded this compound in the language of claim 16 and as corresponding to the uppermost structure on page 20 of the amendment. The rejection stands.

The applicant argues enablement or perhaps the limitations of claim 19, but the reference is a 102 and is in a peer reviewed journal. With respect to figures in the reference, differences in the conjugation state clearly have an effect in the absorption properties as evidenced by the figures showing the absorption profiles of the different states, so they are evidenced as measurable. The rejection stands.

10 Claims 1-7,12,13 and 17-26 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Hafner et al., Bull. Chem. Soc. Jpn., Vol. 61, pp. 155-163 (1988).

Hafner et al., Bull. Chem. Soc. Jpn., Vol. 61, pp. 155-163 (1988) teaches the reaction of azulenes with dimethyl acetylenedicarboxylate to form chiral heptalenes. Compounds g,h,m,n,o,u and v on page 156 are not excluded by the language of claim 16. Compound 36a and 38a on page 161 are not excluded by the claim language of claim 16. The CD spectra show differences in the chiral nature of the compositions.

The exposure of the compounds meets the requirements of the claims as the claims do not require any more than the isomerizations.

The rejection stands for the reasons of record. Clearly the compounds taught in the reference have resonance in the heptalene ring.

11 Claims 1-7,12,13 and 17-26 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Weber et al., Helvetica Chimica Acta, Vol. 70, pp. 1439-1460 (1987) .

Weber et al., Helvetica Chimica Acta, Vol. 70, pp. 1439-1460 (1987) teaches compounds 9 and 11 on page 1441 which are not excluded by the claim language of claim 16 (the esters are ethyl or styryl esters. The syntheses using dimethylene acetylenedicarboxylate is taught on page 1454.

The exposure of the compounds meets the requirements of the claims as the claims do not require any more than the isomerizations.

The rejection stands for the reasons of record. Clearly the compounds taught in the reference have resonance in the heptalene ring.

12 Claims 1,2,6,7,11-14 and 25 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Paquette, L.A., Pure Applied. Chem., Vol 54(5) pp. 978-1004 (1982).

Paquette, L.A., Pure Applied Chem., Vol 54(5) pp. 978-1004 (1982) teaches t-butyl substituted cyclooctatetraene. (structures 44&45) Similar teachings with respect to 1,2 diphenyl substitution is taught with respect to structures 47 and 38 on pages 995,997, 998 and 1001.

The exposure of the compounds meets the requirements of the claims, as the claims do not require any more than the isomerizations.

The applicant fails to appreciate that the claims are broad enough to embrace racemization as the claims do not require that the states be particularly stable. The claims also specifically describe thermal excitation in addition to the photoexcitation. Clearly at lower temperatures, the racemization would stop and each of the two states would be stable and optically distinguishable. The open language of the claims fails to preclude further structural changes beyond the transition between the different conjugation states.

The rejection stands for the reasons of record. The examiner notes that the cyclooctatetraenes of the reference would be expected to be able to undergo the same boat conformation states as shown for 2a' and 2b' on page 5 of the instant application. There is no evidence that they do not on the record and as they are different conformations, their spectral properties would inherently differ.

13 Claims 1,2,6,7,11-14 and 25 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Hafner et al., Pure Applied Chem., Vol. 65(1) pp. 17-25 (1993).

Hafner et al., Pure Applied Chem., Vol. 65(1) pp. 17-25 (1993) teaches the synthesis using bis-enamine and dimethylene acetylenedicarboxylate to form useful heptalenes on page 22. Note compound 27.

The exposure of the compounds meets the requirements of the claims as the claims do not require any more than the isomerizations.

The applicant argues that compounds disclosed are not conjugated heptalenes. The examiner disagrees noting compound 27 which is fully aromatic. The examiner agrees that the

Art Unit: 1756

main thrust is other compounds, but this represents an anticipation rejection, not obviousness. The rejection stands.

The rejection stands for the reasons of record. Clearly the compounds taught in the reference have resonance in the heptalene ring.

14 Claims 1-9,11-14 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable El Houar et al., *Chemia* vol. 50, pp 341 (7/8-1996), in view of Van et al. '561.

Van et al. '561 teaches that it is old and well known that various photochromic materials can be dispersed in binder resins and used to record information. (1/65-2/9) Useful binders include PMMA, polystyrene and the like. (4/51-55). These recording media are used in computers.

It would have been obvious to one skilled in the art to use materials known to be photochromic, such as those disclosed by Houar et al., *Chemia* vol. 50, pp 341 (7/8-1996) in conventional photochromic recording media where the photochromic dyes are mixed with a binder as this is old and well known based upon the teachings of Van et al. '561.

15 Claims 1-9,12,15 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over El Houar et al., *Chemia* vol. 50, pp 341 (7/8-1996), in view of Hoysoya et al. '873.

Hoysoya et al. '873 teaches that photochromic materials are known to be useful in forming optical switches when dispersed in polymeric binder. Any type of photochromic materials may be used in the switches. These include PMMA, polystyrene, and various acrylate resins (6/10-27).

It would have been obvious to one skilled in the art to use materials known to be photochromic, such as those disclosed by Houar et al., *Chemia* vol. 50, pp 341 (7/8-1996) in optical switches using photochromic recording media where the photochromic dyes are mixed with a binder based upon the teaching of Hoysoya et al. '873 that any type of photochromic materials may be used in the switches.

Art Unit: 1756

16 Claims 1-7,10,12 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over El Houar et al., *Chemia* vol. 50, pp 341 (7/8-1996), in view of Caulfield et al., "The Applications of Holography", pp. 30-33 (1970).

It would have been obvious to one skilled in the art to use materials known to be photochromic, such as those disclosed by Briquet et al., *Helvetica Chimica Acta* Vol 79, pp. 2282-2315 (1996) in conventional photochromic holographic media as this is old and well known based upon the teachings of Caulfield et al., "The Applications of Holography", pp. 30-33 (1970).

17 Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin Angebranndt whose telephone number is (703) 308-4397.

I am normally available between 7:30 AM and 5:00 PM, Monday through Thursday and 7:30 AM and 4:00 PM on alternate Fridays.

If repeated attempts to reach me are unsuccessful, my supervisor may be reached at (703) 308-2464.

Facsimile correspondence should be directed to (703) 872-9310.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0661.



Martin J. Angebranndt
Primary Examiner, Group 1750
May 17, 2002